

Appl. No. 10/640,340
Amdt. Dated March 16, 2006
Reply to Office Action of December 16, 2005

Amendments to the Claims

This listing of claims will replace all prior versions and listings of claims in the application:

Listing of Claims:

Claim 1 (currently amended): A carbon nanotube-based device comprising:

a substrate;

**a plurality of alloy catalytic nano-sized particles formed on the substrate;
and**

an aligned carbon nanotube array extending from the alloy catalytic nano-sized particles and progressively bending in a predetermined direction; wherein

said alloy catalytic nano-sized particles each comprise a catalyst material and a ~~catalyst-doped~~ growth-affective material, the ~~catalyst-doped~~ growth-affective material being capable of varying a reaction rate of synthesis of carbon nanotubes of the carbon nanotube array.

Claim 2 (original): The carbon nanotube-based device as claimed in claim 1, wherein the substrate comprises silicon, quartz or glass.

Claim 3 (original): The carbon nanotube-based device as claimed in claim 1, wherein the catalyst material is selected from the group consisting of iron, cobalt, nickel, molybdenum, ruthenium, manganese, and any suitable combination alloy thereof.

Claim 4 (currently amended): The carbon nanotube-based device as claimed in claim 1, wherein the ~~catalyst-doped~~ growth-affective material comprises

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copper, molybdenum, or a combination of copper and molybdenum.

Claim 5 (currently amended): The carbon nanotube-based device as claimed in claim 1, wherein said ~~catalyst-doped~~ growth-affective material is capable of either increasing or decreasing growing rates of said carbon nanotubes of the carbon nanotube array.

Claim 6 (currently amended): The carbon nanotube-based device as claimed in claim 1, wherein a content of said ~~catalyst-doped~~ growth-affective material gradually increases or decreases along another predetermined direction on said substrate.

Claim 7 (currently amended): The carbon nanotube-based device as claimed in claim 1, wherein said ~~catalyst-doped~~ growth-affective material is in a form of layer, and said layer is either thickened or thinned along another predetermined direction on said substrate.

Claims 8-18 (cancelled)

Claim 19 (currently amended): A carbon nanotube-based device comprising:

a substrate;

a plurality of alloy catalytic nano-sized particles formed on the substrate;

and

an aligned carbon nanotube array respectively extending from the alloy catalytic nano-sized particles with gradually respective one of increasing lengths and ~~or~~ decreasing lengths of said carbon nanotubes of the carbon nanotube array arranged along a direction on said substrate; wherein

said alloy catalytic nano-sized particles each comprise a catalyst material and a ~~catalyst-doped~~ growth-affective material, the

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~~catalyst-doped~~ growth-affective material being capable of varying a reaction rate of synthesis of carbon nanotubes of the carbon nanotube array.

Claim 20 (currently amended): The carbon nanotube-based device in accordance with claim 19, wherein a content of said ~~catalyst-doped~~ growth-affective material increases or decreases along said direction on said substrate.